REMARKS

Entry of the foregoing Amendment and reconsideration of this application are requested. Claims 26 and 37 have been amended, claims 38-41 have been added and claims 26 and 37-41 are now pending under 35 U.S.C. § 103(a).

The Examiner has rejected claims 26 and 37 as being unpatentable over Curtiss in view of McCann. The Examiner contends it would be obvious to one having ordinary skill in the art to form the torque transmitting element of Curtiss such that it passes through at least one of the rotatable elements and to form the retaining element of Curtiss as engageable with the torque transmitting element to secure the interlocked tool elements together as taught by McCann.

The present invention contemplates various novel methods of joining at least two tools having housings and rotatable elements at adjustable angles. Claims 26 and 37 have been amended to set forth the step of providing each tool housing with a respective universally engageable mating interlock configuration in the vicinity of one of the rotatable elements. New claims 38-41 set forth other methods of joining two tools having housings and rotatable elements at adjustable angles and are considered to fall within the purview of the invention.

Curtiss discloses a method for joining a first tool having a housing 12 and a torque transmitting element 32 to a second tool having a housing 66, a rotatable element 88 and a particular interlock defined by male splines 104. A multi-piece securable collar assembly 42 having a particular interlock defined by female splines 48 which mate specifically with splines 104 is used to connect the two tools together. The collar assembly 42 includes clamps 56L, R, 58L, R, snap ring 108, washer 110, fastener 62 and nut 64. Rotatable element 88 is rotatably mounted about fixed stub shaft 96 and positioned by bearings 90A and 90B.

McCann discloses a method for joining a first tool having a housing 20 to a second tool 10 having a rotatable element 11 at one end and an interlock or teeth 14 at the other end. A securing mechanism includes a spring 24, a pawl or rotatable element 30, a barrel

40, a torque transmitting element 50 keyed to tool 20 and a retaining element 54. By moving the barrel 40, the teeth 32 of pawl 30 may be forced to engage with the teeth 14 of tool 10 by spring 24, such that tool 10 may be driven and rotatated by tool 20.

With respect to primary reference Curtiss, the joining capabilities are limited by the particular shape of the discrete male splines 104 around rotated element 88 connecting with the discrete female splines 48 of the collar assembly 42. With this design, interchangeability is restricted to combining only the two tool housings 12 and 66. Joining the two Curtiss tool housings 66 is simply not possible because the interlock configurations are not universally engageable as set forth in amended claims 26 and 37. By contrast, the joining capability of the lug interlocks of the present invention is universal in function as set forth, for example, on page 13, line 27 - page 14, line 2 of the application. This design allows any and all tools with lug interlocks to be combined directly and is an important feature of the invention.

Further with respect to Curtiss, the Examiner acknowledges the absence of 1) a torque transmitting element passing through at least one of the rotatable elements and 2) providing a retaining element engageable with the torque transmitting element to secure the interlocked tool housings together. It also appears that there is no second rotatable element for tool 12. Applicant's unique design covered by claims 26 and 37 is described on page 13, lines 8-12 and in Figs. 12 and 12A of his application. Using the square bolt 110 and nut 12 as shown forms a universal rotary transmitting joint and tool connection unforeseen in the prior art. Curtiss requires at least five additional expensive parts to connect his tools 12, 66 together. Although Curtiss shows fastener 62, nut 64, and snap ring 108, they are located apart from the single rotatable element 88 and are incapable by themselves of providing a combined and efficient torque transmitting and coupling function. It should also be appreciated that Curtiss requires a special tool to remove snap ring 108 before tool angles can be changed. The retaining elements of the present invention are hand tightened as they rotate as described on page 14, lines 17-25.

Although secondary reference McCann appears to disclose a similar appearance to Applicant's device, it cannot transmit any torque whatsoever through the combined tools. McCann's method only allows the handle or tool 20 to hold the driving cartridge or tool 10 at different angles. McCann has no second interlock; instead, the rotatable element or pawl 30 is selectively urged into locking or engagement with the teeth 14. Unlike Applicant, McCann never has mating interlocks in constant engagement with each other. When McCann's tools are interlocked, the rotatable elements are not aligned with each other as set forth in claims 26 and 37. McCann's arrangement does not provide transmission of rotary torque through the connecting joint of his tools which is the basis of claims 26 and 37. Indeed, if switch 12 (which provides ratcheting action) were removed from tool 10, these tools 10, 20 would provide no useful function at all. Applicant submits that one skilled in the art would not look to McCann to modify Curtiss and arrive at the subject matter of claims 26 and 37 because there is not rotary torque transmission through aligned rotatable elements as claimed.

Applicant also argues the propriety of the suggested modification would impair the originally intended function of Curtiss. Extending the square shaft transmitting element 32 of Curtiss so that it passes through element 88 and then is retained by lock ring 54 at its bottom, would eliminate cylindrical stub shaft 96 and hamper the lower rotational mounting of gear or rotatable element 88. In addition, plate 68 would need to be altered to accept the rotation of the spinning lock ring 54.

Based on the foregoing, Applicant requests that the rejection of claims 26 and 37 be withdrawn and that these claims be deemed allowable.

The method of joining at least two tools also involves connecting the tools using one component instead of the two components 110 and 112. This is disclosed in the Applicant's specification at page 24, lines 20 and 21 (Fig. 13) and page 14, lines 10-14 (Fig. 4). In these versions, the male square device of any tool may connect with the internal square drive 68 of the sprocket 36 of any other tool using only a single fastening or retaining element 58. This method is now covered by new claims 38 and 39.

Furthermore, the tools of the present invention can be joined on the lug-free side of the tools as described on page 28, lines 9-14 (Figs. 21, 22) for instantly providing variable angles at the same time that rotary torque transfer is occurring through both tools. In other words, the angles between the connected tools may be continuously changed without disconnecting them while driving torque is occurring through the connecting joint. New claim 40 covers the method of joining the lug-free tools using the square bolt 110 and nut 112. New claim 41 covers the method of joining the lug-free tools 20, 113 of Fig. 13.

The tools of the prior art, particularly Curtiss and McCann, cannot be universally combined, or be made instantly variable in angular relationship without disconnection, and contain numerous, expensive parts not needed by the present invention.

It is submitted that the present invention distinguishes from all known prior art of record.

Accordingly, the Examiner is requested to pass this application to issue with claims 26 and 37-41 being deemed allowable.

Respectfully submitted,

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